

IN THE CLAIMS:

Please amend the claims as follows:

*Su*  
*b*

1. (Amended) A method for producing semiconductor integrated circuits, comprising the steps of:

a first step of selectively etching a metallic film formed on a surface of a substrate and exposed through a mask by using a gaseous etchant containing chlorine, bromine, or a compound thereof after the metallic film is selectively covered with the mask made of a resist; and

*A*

a second step of removing the mask used in said etching by ashing [it by] using a plasma generated in an atmosphere containing oxygen gas and water vapor, and removing chlorine, bromine, or a compound thereof[,] which are components of [said] the gaseous etchant [which] that remains on [the] a surface of [said] the metallic film exposed as a result of [the removal of said] said removing of the mask, by forcing [it] the gaseous etchant components to be released from [said] the substrate.

2. (Amended) The method according to claim 1, wherein [said] the metallic film is composed of aluminum or an alloy thereof.

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*B*

3. (Amended) The method according to claim 2, wherein a barrier layer for blocking a reaction between [said] the metallic film and [said] the substrate is provided between the metallic film

and the substrate.

4. (Amended) The method according to claim 1, wherein [said] the substrate is maintained at a temperature of between 100° and 250° C [in] during said second step.

~~5. (Amended) The method according to claim 1, wherein[, in] during said second step, [said] the mask and [said] the metallic film exposed as the result of [the removal] said removing of [said] the mask are exposed to neutral active species extracted from [said] the plasma.~~

~~6. (Amended) The method according to claim 1, wherein[, in] during said second step, [said] the mask and [said] the metallic film exposed as the result of [the removal] said removing of [said] the mask are exposed to [said] the plasma.~~

7. (Amended) A method for producing semiconductor integrated circuits, comprising the steps of:

a first step of selectively etching a metallic film formed on a surface of a substrate and exposed through a mask by using a gaseous etchant ~~containing~~ <sup>comprising</sup> chlorine, bromine, or a compound thereof after the metallic film is selectively covered with the mask made of a resist; and

a second step of removing the mask used in said etching by ashing [it by], said second step including separately generating a

plasma in a first atmosphere containing oxygen gas and in a second atmosphere containing water vapor, exposing [it] the mask to neutral active species extracted from the plasma generated in the first atmosphere, [after a plasma is generated separately in both a first atmosphere containing oxygen gas and a second atmosphere containing water vapor,] and removing chlorine, bromine, or a compound thereof[,] which are components of [said] a residual etchant exposed on [the] a surface of [said] the metallic film [exposed as the result of the removal of said mask] by exposing [it] the residual etchant components to at least neutral active species in the plasma generated in the second atmosphere [and by] thereby forcing [it] the residual etchant components to be released from [said] the substrate.

8. (Amended) The method according to claim 7, wherein [said] the metallic film is composed of aluminum or an alloy thereof.

9. (Amended) The method according to claim 8, wherein a barrier layer for blocking the reaction between [said] the metallic film and [said] the substrate is provided between the metallic film and the substrate.

10. (Amended) The method according to claim 7, wherein [said] the substrate is maintained at a temperature of between 100° and 250° C [in] during said second step.

*SAC*

11. (Amended) A method for producing semiconductor integrated circuits, comprising the steps of:

a first step of selectively etching a metallic film exposed through a mask by using a gaseous etchant containing chlorine, bromine, or a compound thereof after the metallic film formed on a surface of a substrate is selectively covered with the mask made of a resist; [and]

a second step of removing the mask used in said etching by ashing [it by] using a first plasma generated in an atmosphere containing oxygen gas; and

a third step of removing chlorine, bromine, or a compound thereof, which are components of [said] a residual etchant on [the] a surface of [said] the metallic film exposed as the result of [the removal] said removing of [said] the mask [by], said step of removing the residual etchant components including using a second plasma generated in an atmosphere containing water vapor thereby forcing [it] the residual etchant components to be released from [said] the substrate [by using a second plasma generated in an atmosphere containing water vapor].

12. (Amended) The method according to claim 11, wherein said second and third [processes] steps are performed by using the same apparatus.

13. (Amended) The method according to claim 11, wherein said second and third [processes] steps are performed by using a

different apparatus for each [process] step.

14. (Amended) The method according to claim 13, wherein the apparatus used in said third [process] step is of a downflow type.

15. (Amended) The method according to claim 11, wherein [said] the metallic film is composed of aluminum or an alloy thereof.

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PJS*  
16. (Amended) The method according to claim 11, wherein a barrier layer for blocking the reaction between [said] the metallic film and [said] the substrate is provided between the metallic film and the substrate.

17. (Amended) The method according to claim 11, wherein [said] the substrate is maintained at a temperature of between 100° and 250° C in said second step.

18. (Amended) The method according to claim 11, wherein [said] the metallic film is exposed to neutral active species extracted from the second plasma in [the] said third [process] step.

19. (Amended) The method according to claim 11, wherein [said] the metallic film is exposed to [said] the second plasma in

[the] said third [process] step.

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20. (Amended) An apparatus for producing semiconductor integrated circuits, comprising:

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*and*  
an etching chamber having etching means for selectively etching a metallic film formed on a substrate and covered with a mask formed of a resist [by using], the etching means incorporating a gaseous etchant containing chlorine, bromine, or a compound thereof;

an ashing chamber having ashing means for ashing [said] the mask formed on [said] the substrate [and], said ashing chamber being connected[,] through a first load lock chamber which is capable of making a vacuum, to said etching chamber [and sent from said etching chamber by using], said ashing means incorporating a plasma generated in an atmosphere containing oxygen gas so as to remove [it] the mask; and

an after-treatment chamber including after-treatment means for removing residual chlorine, bromine, or a compound thereof on [the] a surface of [said] the metallic film on [said] the substrate, said after-treatment chamber being connected to said [etching] ashing chamber through a [first] second load lock chamber which is capable of making a vacuum [and sent from said etching chamber by using], said after-treatment means incorporating a plasma generated in an atmosphere containing water vapor.